

IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF VIRGINIA  
DANVILLE DIVISION

UNITED STATES OF AMERICA	)	
	)	
v.	)	Criminal No. 4:18CR00011
	)	
DASHAUN LAMAR TRENT and	)	
SHABBA LARUN CHANDLER	)	
	)	
Defendants.	)	

**GOVERNMENT’S RESPONSE TO DEFENDANTS’  
MOTION TO EXCLUDE FIREARMS AND BALLISTICS EVIDENCE**

The United States of America, by its undersigned counsel, hereby files this response in opposition to Defendant Dashaun Trent’s Motion in *Limine* to Exclude Ballistic Evidence, or Alternatively, for a *Daubert* Hearing (Docket No. 570), Defendant Dashaun Trent’s Objection to Government Exhibit 324 (ECF No. 577); Defendant Dashaun Trent’s Objection to Government’s Notice of Three Expert Witnesses (ECF No. 569); Defendant Shabba Chandler’s Motion to Exclude Firearm Identification Evidence (ECF No. 581); and Defendant Shabba Chandler’s Motion to Exclude Firearm Identification Evidence (ECF No. 612) (collectively, “the Motions”). For the reasons stated below, the Motions should be denied.

**BACKGROUND AND RELEVANT FACTS**

The United States alleges that, in the summer of 2016, members of the Milla Bloods street gang and the Rollin 60s Crips street gang “tied the flag” in order to facilitate their criminal activities in the Danville, Virginia area. Such concerted action included the attempted murders of the “Philly Boys” at North Hills Court on June 15, 2016, and the later attempted murder of Justion Wilson and murder of Christopher Motley at North Hills Court on August 20, 2016. The “tying of the flags” was also discussed at a meeting on the day of or in the days immediately before the

Motley murder, at the residence of the “Big Homie” for the Rollin 60s Crips. All of these events occurred in Danville, Virginia.

On June 11, 2018, a federal Grand Jury indicted members and associates of the Rollin 60s Crips street gang, and members and associates of the Milla Bloods street gang, on violations of Title 18, United States Code, Section 1962 (Racketeer Influenced and Corrupt Organizations Act); Title 18, United States Code, Section 1959 (Violent Crimes in Aid of Racketeering), and a variety of other charges, including firearms and obstruction-related offenses. These cases are captioned *United States v. Davis*, 4:18-cr-11, and *United States v. Anthony et al.*, 4:18-cr-12. The Grand Jury issued a First Superseding Indictment in *United States v. Davis et al*, 4:18-cr-11, on November 6, 2018.

In order to establish the elements of the charged offenses, the government intends to offer firearms and ballistic evidence collected from eight separate crime scenes in Danville and one in Hyattsville, Maryland. These crime scenes include:

- December 9, 2015                      Shooting at 177 Sunset Lane
- April 26, 2016                         Shooting on Garland Street (approx. 1:20 a.m.)
- April 26, 2016                         Shooting on Berryman Street (approx. 2:40 a.m.)
- June 15, 2016                          “Philly Boys” shooting at North Hills Court
- August 20, 2016                        Murder of C. Motley at North Hills Court
- August 24, 2016                        Shooting of Tyliek Conway
- November 2, 2016                      Consensual Encounter
- November 4, 2016                      Execution of SW at residence of Jaquan Trent
- April 29, 2017                          Seizure of .40 caliber firearm by MNC Park Police in Hyattsville, MD

At trial, the government intends to introduce expert testimony from three experts in the field of Firearms and Toolmark identification: Wendy Gibson, Courtney Etzelmiller, and Scott McVeigh.

Wendy Gibson is a Forensic Scientist Supervisor within the Firearm and Toolmark Section of the Virginia Department of Forensic Science (“DFS”). Ms. Gibson will testify consistently with the DFS reports and supporting documentation produced to the defense about the characteristics of spent shell casings found at numerous crime scenes. The government anticipates that Ms. Gibson will testify that certain bullets and spent shell casings found at one crime scene can be associated with bullets, spent shell casings, or firearms recovered from other crime scenes. The specifics of her anticipated testimony regarding confirmed associations are more fully detailed later in this memorandum.

Courtney Etzelmiller is also a Forensic Scientist within the Virginia Department of Forensic Science’s Firearm and Toolmark section. Ms. Etzelmiller will testify consistently with the DFS reports and supporting documentation produced to the defense about the characteristics of a cartridge case that was found at the scene of the August 20, 2016, murder of Christopher Motley. Specifically, she will testify that this casing was microscopically examined and found to exhibit markings that made it suitable for identification with the firearm from which it was fired. Further, it is anticipated that as a result of this determination, Ms. Etzelmiller entered an image into the National Integrated Ballistic Information Network (“NIBIN”).<sup>1</sup> The specifics of her anticipated testimony are more fully detailed later in this memorandum.

Scott McVeigh is a Senior Firearm and Toolmark Examiner with the Prince George’s County (Maryland) Police Department (“PGCPD”), Firearm Examination Unit. Mr. McVeigh will

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<sup>1</sup> “NIBIN” is a national database of digital images of spent bullets and cartridges that were found at crime scenes or test fired from confiscated weapons. The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATFE) manages the system.

testify consistently with the PGCPD reports and supporting documentation produced to the defense counsel. Specifically, Mr. McVeigh will testify that the recovered casing from the Motley murder that was examined by Ms. Etzelmler and referenced in the preceding paragraph was fired from a .40 caliber S&W pistol recovered in Hyattsville, Maryland by the Maryland National Capital Park Police on April 29, 2017. The specifics of his anticipated testimony regarding the association of the cartridge are more fully detailed later in this memorandum.

The government is unaware of *any* court that has excluded toolmark examination expert testimony under *Daubert v. Merrell Dow Pharms. Inc.*, 509 U.S. 579 (1993), or any other standard. Because there is no scientific or legal basis to exclude the evidence the government intends to offer, and because the proffered experts are fully qualified to offer their opinions, as described below, the Motions should be denied.

#### **A. Overview of firearms and toolmark forensic examination<sup>2</sup>**

Firearm identification has been a forensic discipline since the 1920s. *See* Hamby, J., “The History of Firearm and Toolmark Identification,” The Association of Firearm and Tool Mark Examiners (“AFTE”) Journal, Vol. 31(3), Summer 1999, pp. 266-84. Firearms identification is a subset of the broader forensic discipline known as toolmark identification. Toolmark examiners are trained to examine the marks left by tools on surfaces to associate or “match” a toolmark to the particular tool that made the mark. Firearms are a subset of tools that impart marks; unlike most other tools, they primarily impart marks on bullets and cartridge cases. *See* AFTE.org/resources/swggun-ark, Foundational Overview of Firearm/Toolmark Identification.

A firearm imparts different types of marks on the various components of a cartridge. With respect to bullets, cuts within a gun barrel (“grooves”) and raised surfaces (“lands”) create

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<sup>2</sup> This overview section is based primarily on a series of affidavits authored by firearms and toolmark expert Stephen Bunch (formerly the Unit Chief with the FBI Firearms/Toolmark Unit, and formally with the Virginia Department of Forensic Science), dated May 29, 2008, July 8, 2008, and June 5, 2009, in connection with *Frye* litigation in the District of Columbia. Ms. Gibson has also reviewed this overview section.

corresponding depressed “land impressions” and raised “groove impressions” as bullets travel through a barrel. The twist imparted on a bullet can be either left or right, depending on the direction of the lands and grooves. With respect to cartridge casings, contact between the cartridge and the breech create “breech face marks,” and the impact of the firing pin on the primer creates a “firing pin impression” on the primer itself. The working edges of tools, which include components of firearms that contact ammunition, generally consist of some type of hard material, such as steel, to ensure strength and durability of the tool, while work pieces are generally made of softer materials. The surfaces of a tool that contact the material contain random, microscopic irregularities that are produced during the tool’s manufacture or subsequent wear. These irregularities, which are formed randomly, can individualize or distinguish one tool from another. Because these irregularities or individual characteristics are typically imparted onto the work piece, the comparative study of the imparted markings allow the tool to be individually associated or identified as having produced the mark. The presence, observation, and comparison of these random toolmarks on tools form the hypothetical propositions upon which the discipline of toolmark identification is based.

Firearm and toolmark identification is based upon two testable propositions:

Proposition #1:

Toolmarks imparted to objects by different tools will rarely if ever display agreement sufficient to lead a qualified examiner to conclude the objects were marked by the same tool. That is, a qualified examiner will rarely if ever commit a false positive error (misidentification).

Proposition #2:

Most manufacturing processes involve the transfer of rapidly changing or random marks onto work pieces such as barrel bores, breech faces, firing pins, screwdriver blades, and the working surfaces of other common tools. This is caused principally by the phenomena of tool wear and chip formation or by electrical/chemical erosion. Microscopic marks on tools may then continue to change from further wear, corrosion, or abuse.

*See* Bunch et al., “Is a Match Really a Match? A Primer on the Procedures and Validity of Firearm and Toolmark Identification,” *Forensic Science Communications*, Vol. 11(3), July 2009.

Examiners are trained to recognize and evaluate the following characteristics: (1) class characteristics; (2) subclass characteristics; and (3) individual characteristics. Class characteristics, such as caliber, number of land and grooves, etc., are predetermined during the manufacturing process. For a fired bullet, class characteristics include the number of land and groove impressions, the direction of twist of the land and groove impressions, and the width of the land and groove impressions. For a fired cartridge case, class characteristics are typically limited to the firing pin impression on the primer, which can appear in various shapes, including circular, rectangular, hemispherical, and elliptical shapes, and to the shape of the firing pin aperture and the type of breech face impression, which can be in different shapes and orientations, *e.g.*, arched, circular, parallel, etc. These are measurable features of a specimen that indicate a restricted group source. They result from design factors and are determined prior to manufacture. *See* AFTE Glossary, 6<sup>th</sup> ed.

Subclass characteristics are more restrictive than class characteristics and are consistent among items manufactured by the same tool in the same approximate state of wear. *Id.* These characteristics typically exist within a particular production run in the manufacturing process and occasionally arise from (1) imperfections in a machine tool that persist during the production of multiple firearm components; or (2) extreme hardness differences between the machine tool and the work pieces. Qualified examiners are trained to distinguish subclass characteristics from individual characteristics because identifications may not be made from subclass characteristics.

Individual characteristics, on the other hand, consist of microscopic, random imperfections in the barrel or firing mechanism created by the manufacturing process, wear, corrosion, or abuse.

One set of individual characteristics comprises unintended microscopic features that occur due to the machining process and random chip formation during manufacturing. Individual characteristics typically fall into two categories: (1) striated marks made by movement of a fired bullet through a gun's barrel (typically appearing as scratches or striations), and (2) impressed marks that are pressed into a surface. A fired bullet usually has striated marks. A spent cartridge case, on the other hand, can have both impressed and striated marks. Before firing, the process of feeding the cartridge into the chamber can create striated marks. Once the firearm is fired, striated marks also can be imparted to the cartridge case wall (side), and impressed marks are imparted to the cartridge case by the gun's firing pin and breech. With semi-automatic weapons, additional marks can be made as the cartridge case is expelled from the gun. Marks produced by the random imperfections or irregularities of tool surfaces are produced incidental to manufacture and/or caused by use, corrosion, or damage. *See* AFTE Glossary, 6<sup>th</sup> ed. In general, the tool working surfaces in a firearm can slowly change over time from wear and may leave different marks on bullets and casings. As microscopic similarities diminish, the likelihood of an inconclusive result increases, but the likelihood of a false positive should remain unchanged.

Since the inception of firearms and toolmark identification as a forensic discipline, firearms examiners have been using a method known as "pattern matching" to determine whether sufficient similarity exists between toolmarks to warrant a conclusion that two bullets or two cartridge cases came from the same firearm. In 1992, AFTE memorialized the Theory of Identification to explain the basis of opinions of common origin in toolmark comparisons:

1. The theory of identification as it pertains to the comparison of toolmarks enables opinions of common origin to be made when the unique surface contours of two toolmarks are in "sufficient agreement."
2. This "sufficient agreement" is related to the significant duplication of random toolmarks as evidenced by the correspondence of a pattern or combination of patterns of surface contours. Significance is determined by

the comparative examination of two or more sets of surface contour patterns comprised of individual peaks, ridges and furrows. Specifically, the relative height or depth, width, curvature and spatial relationship of the individual peaks, ridges and furrows within one set of surface contours are defined and compared to the corresponding features in the second set of surface contours. Agreement is significant when *the agreement in individual characteristics* exceeds the best agreement demonstrated between toolmarks known to have been produced by different tools and is consistent with agreement demonstrated by toolmarks known to have been produced by the same tool. The statement that “sufficient agreement” exists between two toolmarks means that the agreement *of individual characteristics* is of a quantity and quality that the likelihood another tool could have made the mark is so remote as to be considered a practical impossibility.

3. Currently the interpretation of individualization/identification is subjective in nature, founded on scientific principles and based on the examiner’s training and experience.

Committee for the Advancement of the Science of Firearm & Toolmark Identification, “Theory of Identification as it Relates to Toolmarks: Revised,” AFTE Journal, Vol. 43(4), Fall 2011, p. 287; *see also* AFTE Criteria for Identification Committee: Theory of Identification, Range of Striae Comparison Reports and Modified Glossary Terms—An AFTE Criteria for Identification Committee Report, AFTE Journal, Vol. 24(3), 1992, pp. 336-40; and AFTE Glossary 6<sup>th</sup> Edition at 136.

The discipline of firearm and toolmark identification follows a recognized examination methodology involving two phases of analysis. The first phase focuses on an objective evaluation of the existing class characteristics. If they are similar, the examination moves to the second phase involving the comparative microscopic evaluation of individual characteristics that culminates in an opinion of sufficient agreement, which is subjective. The levels of analysis firearm and toolmark examiners follow to determine a common source are outlined as follows:

1. Evaluation (Objective): The initial examination phase evaluates evidence to determine if the observed class characteristics are the same between two specimens (two unknown specimens, or an unknown and a known specimen). If the specimens are suitable for examination and the class characteristics are the same, then it is possible that the toolmarks were produced utilizing the same tool (such as a firearm). If they are different,



then the two specimens can be eliminated as having been produced by the same tool.

2. Comparison (Subjective—Pattern Matching): If the class characteristics are consistent between two specimens, then a comparative examination is performed utilizing a comparison microscope. The methodology utilized in the examination process is pattern matching. This comparison is conducted to determine: 1) if any marks present are subclass characteristics and/or individual characteristics, and 2) the level of correspondence of any individual characteristics.
3. Conclusion: If sufficient agreement of individual characteristics is observed between two specimens, an identification conclusion is rendered. If all of the discernible class characteristics are the same, but sufficient agreement of the individual characteristics is not observed, an inconclusive result is rendered.<sup>3</sup> In some situations, an elimination conclusion may be rendered based on observed differences in individual characteristics.
4. Verification: A verification process is employed to ensure proper conclusions are rendered. As outlined in a laboratory's quality assurance policy, a mechanism should be in place to determine which cases will require verification. Many laboratories, including Virginia Department of Forensic Science and the Prince George's County Police Department's Forensic Science Division, require verification of all identifications.

*See [afte.org/resources/swggun-ark/summary-of-the-examination-method](http://afte.org/resources/swggun-ark/summary-of-the-examination-method).*

Using this methodology for examining toolmarked surfaces, there are four conclusions that examiners reach when conducting an examination: (1) identification, (2) inconclusive, (3) elimination, and (4) unsuitable for comparison. Examiners undergo standardized technical training designed to develop the cognitive skills that allow them to recognize the patterns of individual characteristics necessary to make an identification. However, there is no way to be absolutely (100%) certain of any identification without comparing a particular set of marks to marks created by every firearm produced since the invention of the modern day firearm—an impossible endeavor. Thus, an examiner cannot rule out with absolute certainty the highly unlikely

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<sup>3</sup> The AFTE Glossary (6<sup>th</sup> Edition) describes three subcategories of inconclusive results: (1) Agreement of all discernible class characteristics and some agreement of individual characteristics, but insufficient for an identification; (2) Agreement of all discernible class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency or lack of reproducibility; (3) Agreement of all discernible class characteristics and disagreement of individual characteristics, but insufficient for an elimination.

event that two different firearms will produce indistinguishable individual characteristics. To date, such an occurrence, however, remains theoretical.

The field of forensic firearm and toolmark identification continues to undergo testing in the form of (1) technical research; (2) validation studies; and (3) proficiency testing. Validation studies are the most comprehensive way to test and validate firearms and toolmark identification as a reliable forensic science. These tests involve “ground truth,” such that it is known with absolute certainty where each of the test components came from. Using the same methods and identification criteria as those in actual casework, qualified examiners have consistently reached correct conclusions with exceptionally low error rates, as described further below. Even where researchers have studied bullets and cartridge cases fired from consecutively manufactured firearms—where the possibility of a false-positive conclusion is at its highest—trained examiners readily have been able to distinguish marks produced by the various firearms.

## **B. Testimony by firearms examiners**

Firearms evidence has been admitted in American courts for over a century. Over that time, the manner in which firearms examiners articulate an identification of a cartridge case or bullet to a known exemplar has been refined. Historically, many firearms examiners made identifications in absolute terms to the exclusion of all others. However, as the firearms and toolmark community evolved and embraced language that would not overstate the significance of a firearms identification under the AFTE Theory of Identification, the manner in which the significance of the identification is stated has evolved as well. In line with AFTE standards, the caselaw described below, and former Attorney General Lynch’s memorandum of September 6, 2016,<sup>4</sup> the government does not intend to elicit an identification of absolute certainty or to have

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<sup>4</sup> On September 6, 2016, then-Attorney General Loretta E. Lynch directed DOJ components to implement policies designed to strengthen forensic practices, including the following:

the experts in this case make identifications of a cartridge case or a bullet to a single firearm to the certain exclusion of all other firearms. Moreover, the experts' conclusions will not be qualified by the expression "to a reasonable scientific certainty." Instead, the government intends to elicit testimony that will communicate the examiners' conclusions to the jury without overstating or understating the probative nature of his or her conclusions.

### **C. Training and experience of the proffered expert witnesses**

#### **1. Wendy Gibson, Forensic Science Supervisor**

Wendy Gibson is a Forensic Science Supervisor who specializes in firearms and toolmark examination. She earned a Bachelor of Science degree in Chemistry from San Diego State University in 1995 and a Master of Science in Criminal Justice Administration from Virginia Commonwealth University in 2003. *See Gibson Curriculum Vitae, EXHIBIT A.*

Ms. Gibson has spent the majority of her post-undergraduate career in the Firearms and Toolmark Identification Section of the Virginia DFS. *Id.* She began her program of training in 1992 with the Crime Laboratory of the San Diego, California Police Department. She became a Forensic Scientist Trainee for the Virginia DFS in January 1996. *Id.* In September 1997, after successfully completing DFS proficiency testing, she became a DFS firearms and toolmark examiner. *Id.* In 2007, Ms. Gibson became a Forensic Scientist Senior, and in 2013 she became a Forensic Scientist Supervisor, a position she holds today. *Id.*

In 1996, Ms. Gibson joined the Association of Firearm and Tool Mark Examiners ("AFTE"), the leading professional organization in the field, as a provisional member; she became

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Department forensic laboratories will review their policies and procedures to ensure that forensic examiners are not using the expressions "reasonable scientific certainty" or "reasonable [forensic discipline] certainty" in their reports or testimony. Department prosecutors will abstain from use of these expressions when presenting forensic reports or questioning forensic experts in court unless required by a judge or applicable law. *See* November 6, 2016 AG Memo for Head of Department Components, *available at* <https://www.justice.gov/opa/file/891366/download>, at 1.

a full member in 1997. *Id.* Since 2011, and before conducting the examinations at issue here—Ms. Gibson has been AFTE-certified in the fields of Firearm Evidence Examination and Identification, Toolmark Evidence Examination and Identification. *Id.* Ms. Gibson became AFTE-certified in Gunshot Residue Analysis in 2013. *Id.*

DFS requires its examiners to complete annual proficiency tests administered by Collaborative Testing Services, Inc., a leading forensic laboratory testing agency, in both firearm and toolmark examination. Ms. Gibson has taken and passed both proficiency tests each year since 1997, having made no false positive identifications in any of them. She has conducted forensic examinations of tens of thousands of cartridge cases/bullets and thousands of firearms. She has testified as an expert in more than 160 state and federal cases, without ever being excluded as an expert.

Ms. Gibson has also participated in a number of research studies recounted in several of the published articles cited below, including those by Fadul (2013), Baldwin (2014), and Hamby (2009).

Finally, Ms. Gibson has published numerous scholarly articles for the AFTE Journal, presented at numerous conferences, and has served as an adjunct faculty member for the Forensic Science Graduate Program (Firearm & Toolmark course) at Virginia Commonwealth University. *Id.*

## **2. Courtney Etzelmiller**

Courtney Etzelmiller is a Forensic Scientist Senior in the Firearm and Toolmark Section of the Virginia Department of Forensic Science. She has been a Forensic Scientist with that lab since 2007. *See Etzelmiller Curriculum Vitae*, EXHIBT B. She obtained her Bachelors of Science in Psychology from Nebraska Wesleyan University in 2001, and a Masters of Forensic Science, with an emphasis in Forensic Psychology, from the same institution in 2005. *Id.* Prior to her

employment with the Virginia DFS, she was a Forensic Fellow with the Firearm and Toolmark Section at the Virginia Institute of Forensic Science and Medicine (June 2006-June 2007), and an Intern at the Miami-Dade Medical Examiner Department (July 2003, July-August 2005). In their Motions, the defense suggests that Ms. Etzelmiller is somehow unqualified to serve as an expert in the field of firearms and toolmark identification because she holds a B.S. in Psychology and a M.F.S. in Forensic Psychology rather than some other more relevant degree such as engineering. Trent Motion, ECF 570 at 5. The government notes with some irony that Adina Schwartz, the author of the law review article submitted by counsel, and on whose expert opinion defense would like this court to rely, is far less credentialed in the field of Firearm and Toolmarks than the government's expert of which counsel is so critical. Dr. Schwartz has a B.A. in Philosophy, a Ph.D. and a J.D. with no practical firearms and toolmark experience - not the background in metals and engineering that counsel argues is necessary for any expert in this discipline. ECF. No. 570 at 5. *United States v. Taylor*, Case No. 2:07cr1244, Docket No. 566 (Mem. Op. and Order Granting U.S. Mot. to Exclude Expert Testimony of Adina Schwartz, Sept. 30, 2009).<sup>5</sup> In challenging Ms. Etzelmiller's credentials, Counsel ignores the specialized training Ms. Etzelmiller has had over the

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<sup>5</sup> Even more significant, in the Memorandum Opinion excluding her "expert testimony" at trial, the Court noted of Dr. Schwartz's qualifications that she "...obtained a B.A. in Philosophy from Oberlin College in 1971, a Ph.D. from the Rockefeller University in 1976, and a J.D. from Yale Law School in 1985. She is currently a professor of police science and criminal justice administration at John Jay College of Criminal Justice at the City University of New York..." *Id.* The court went on to note:

First, the Court finds that that Dr. Schwartz is not qualified by knowledge, skill, training, education, or any other means to give opinion testimony in which she disagrees (or agrees, for that matter) with the specific conclusions of the Government's firearms examiner in this case. As many other courts that have had occasion to interact with Dr. Schwartz have noted, she is not a firearms examiner. *See, e.g. United States v. Monteiro*, 407 F. Supp.2d 351 (D. Mass. 2006); *United States v. Barnes*, 04 CR 186, at \*8 (S.D.N.Y. April 2, 2008) (unpublished decision), *Commonwealth v. Meeks, et al.*, Nos. 2002-10961, 2003-10575, 2006 WL 2819423, at \*29-37 (Mass. Super. Sept. 28, 2006) (unpublished decision). She has no experience in conducting firearms or toolmark identification examinations, nor has she ever taken a proficiency test in the field of firearm investigation; indeed she testified before this Court that she has never fired a gun. *Id.*

years to make her eminently qualified to serve as an expert, including: Matching for the Firearm Examiner (2018), Cognitive Bias Training (2016); Subclass Characteristic Workshop (2015); Ruger and Glock's Armorer's courses (2016, 2009, 2007); and the NIBIN Training Course (2007), among others. EXHIBIT B. Additionally, she has served as an instructor at the Forensic Academy for Law Enforcement Officers, Virginia Department of Forensic Science, in 2006-2008 and 2014 and has participated in a number of research studies. *Id.*

Ms. Etzelmiller has testified on approximately 75 occasions from May 2008 to the present, in federal court in the Eastern District of Virginia and numerous state courts without ever being excluded as an expert. *Id.*

### **3. Scott McVeigh**

Scott McVeigh is a senior Firearm and Toolmark Examiner in the Prince George's County Police Department's Forensic Science Division - Firearm Examinations Unit ("PGC-FEU"). Mr. McVeigh has over 30 years of professional law enforcement experience, having served as a patrol officer, detective, senior evidence technician, firearm evidence technician, and crime lab coordinator (among other responsibilities) in addition to his current role. *See* McVeigh *Curriculum Vitae*, EXHIBIT C. He has received extensive training in the field of forensics and firearms, including from the AFTE, the U.S. Department of Justice ("DOJ"), and the firearms manufacturers themselves. *Id.* Mr. McVeigh has been a member of AFTE for approximately fifteen years. *Id.* He is a published author on the topic of firearms and toolmark examinations and a frequent presenter at professional conferences. *Id.* Mr. McVeigh has been an instructor and lecturer on the topic of firearm and toolmark identification at the ATFE National Firearms Examiner Academy and Prince George's County Community College, among others. *Id.* Mr. McVeigh has worked on numerous criminal investigations and has testified 101 times over the course of his career, mostly in state court. Like the other witnesses, the Government will seek to

qualify Mr. McVeigh as an expert in this case based upon: (1) his ability to explain the theory behind and steps involved in firearm identification; (2) his ability to describe the information and evidence he has relied upon to formulate his opinions; (3) his ability to phrase, in laymen's terms the salient portions of his report for the benefit of jurors; (4) the notion that firearm identification has proven to be accurate by law enforcement around the country and has been accepted by federal courts as reliable evidence; and (5) the fact that he has been qualified and testified as an expert in the field of firearm analysis numerous times.

#### **D. The DFS and Prince George's Police Department Firearm Examination Unit**

##### **1. The DFS laboratory**

DFS is an independent state agency created by statute. Va. Code Ann. § 9.1-1100. The Director of DFS does not report to any local police department or federal agency. *Id.* (Director of DFS acts "under the direction and control of the Governor"). The laboratory is accredited by ANSI-National Accreditation Board (ANAB) (previously the American Society of Crime Lab Directors Laboratory Accreditation Board) as meeting the requirements of ISO/IEC 17025:2005, and has been so accredited since 1989.<sup>6</sup> DFS's firearms and toolmarks training and procedures manuals are publicly available.<sup>7</sup>

The laboratory's policy, in line with AFTE guidelines, requires all identifications of matches and all eliminations of matches based on individual characteristics to be verified by a second examiner.

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<sup>6</sup> See <http://www.dfs.virginia.gov/about-dfs/accreditations/>.

<sup>7</sup> See <http://www.dfs.virginia.gov/wp-content/uploads/2017/09/240-D100-FX-TM-Procedures-Manual.pdf> (2017); <http://www.dfs.virginia.gov/wp-content/uploads/2016/08/240-D200-FX-TM-Training-Manual.pdf> (2016).

## **2. The Prince George's County (MD) Forensic Sciences Division – Firearms Examination Unit**

The Prince Georges County Forensic Sciences Division – Firearms Examination Unit was established as a firearms examination laboratory in 1994. The laboratory has been accredited by ANSI – National Accreditation Board (ANAB) (previously ASCLD-LAB)/ISO 17025 in Palmer Park, MD since 2008. The laboratory is also licensed by the Maryland Department of Health. The Maryland Department of Health, through the Forensic Laboratory Advisory Committee (FLAC), provides oversight for all laboratories that conduct work in the state, investigates complaints, monitors proficiency testing, and all other activities associated with licensure. The unit utilizes the National Integrated Ballistics Information Network (NIBIN) database to enter cartridge cases into the system for correlation against images in an attempt to link different crimes together.

The laboratory's policy, in line with AFTE guidelines, requires all identifications of matches and all eliminations of matches based on individual characteristics to be verified by a second examiner.

## **3. Results reported in the DFS and PGC-FEU Certificates of Analysis in this investigation**

The government has produced over a dozen Certificate of Analysis reports from DFS and one from the PGCPD-FEU, most of them related to the firearms and toolmark analyses challenged here. See EXHIBIT D. The analyses matched casings and firearms recovered from various crime scenes in Danville. The analyses also matched a shell casing recovered from a murder scene in Danville to a firearm recovered in Hyattsville, Maryland. The government anticipates eliciting testimony from witnesses that these crime scenes are related in that they represent a pattern of activity committed by, and on behalf of, the charged RICO enterprise of which these witnesses were members and associates. The association of these crime scenes will serve as both independent



evidence of guilt as well as evidence corroborating the testimony of witnesses. The following chart is a summary of the forensic results at issue:

<b><u>Crime Scene</u></b>	<b><u>Lab Item #</u></b>	<b><u>Description</u></b>	<b><u>COA Report Lab #</u></b>	<b><u>Result (Examiner)</u></b>
December 9, 2015: Shooting at 177 Sunset Lane	1	Three (3) Tula Cartridge Works caliber 7.62 cartridge cases	W15-11669	Identified as being fired in the same firearm as Item 26 in the Berryman shooting (W. Gibson)
December 9, 2015: Shooting at 177 Sunset Lane	12	Eleven (11) cartridge casings. One (1) Dynamic Research Tech Brand and ten (10) Remington brand caliber .45 auto cartridge cases.	W15-11669	Identified as being fired in the same firearm as Item 82 casing from the “Philly Boys” shooting and Item 11 casing from the Jaquan Trent SW test fired firearm (W. Gibson)
April 26, 2016 (1:20 a.m.) Shooting on Garland Street	4F	Hornaday brand caliber 9mm Luger cartridge case	W16-4792	Identified as having been fired in the same firearm as Item 70 of the “Philly Boys” shooting (W. Gibson)
April 26, 2016 (1:20 a.m.) Shooting on Garland Street	5	Four (4) Winchester brand caliber 40 Smith & Wesson cartridge cases	W16-4792	Identified as having been fired in the same firearm as Item 23 from the Berryman Shooting. (Laura Hollenbeck/Verified by W. Gibson)
April 26, 2016 (2:40 a.m.) Shooting on Berryman Street	23	Winchester brand caliber .40 Smith and Wesson cartridge case	W16-4230	Identified as having been fired in the same firearm as Item 8 of the “Philly Boys” shooting (W. Gibson)
April 26, 2016 (2:40 a.m.)	26	Tula Cartridge Works caliber	W16-4230	Identified as having been fired in the

Shooting on Berryman Street		7.62.39 mm cartridge case		same firearm as Item 1 of the 177 Sunset Lane shooting (W. Gibson)
<b><u>Crime Scene</u></b>	<b><u>Lab Item #</u></b>	<b><u>Description</u></b>	<b><u>COA Report Lab #</u></b>	<b><u>Result (Examiner)</u></b>
June 15, 2016: "Philly Boys" Shooting – North Hills Court	8	Winchester brand caliber .40 Smith and Wesson cartridge case	W16-6453	Identified as having been fired in the same firearm as Item 23 of the Berryman Street shooting (W. Gibson)
June 15, 2016: "Philly Boys" Shooting – North Hills Court	14	Winchester brand caliber 9mm Luger cartridge case	W16-6453	Identified as being fired from Item 11 pistol from the Consensual Encounter (W. Gibson)
June 15, 2016: "Philly Boys" Shooting – North Hills Court	23	Speer brand caliber 9mm Luger cartridge case	W16-6453	Identified as being fired from Item 11 pistol from the Consensual Encounter (W. Gibson)
June 15, 2016: "Philly Boys" Shooting – North Hills Court	68	Federal brand caliber .40 Smith and Wesson cartridge case	W16-6453	Identified as having been fired in the same firearm as Item 4 of the Consensual Encounter (W. Gibson)
June 15, 2016: "Philly Boys" Shooting – North Hills Court	70	Federal brand caliber 9mm Luger cartridge case	W16-6453	Identified as having been fired in the same firearm as Item 4 in the Garland Street shooting (W. Gibson)
June 15, 2016: "Philly Boys" Shooting – North Hills Court	82	Remington brand caliber .45 Auto cartridge case	W16-6453	Identified as having been fired in the same firearm as Item 11 of the Jaquan Trent SW on Parker Street (W. Gibson)

August 20, 2016: Murder of C. Motley – North Hills Court	2	.40 caliber shell casing	W16-8043	Identified as having been fired from the firearm Item 1 of the Maryland Park Police seizure (C. Etzelmiller)
<b><u>Crime Scene</u></b>	<b><u>Lab Item #</u></b>	<b><u>Description</u></b>	<b><u>COA Report Lab #</u></b>	<b><u>Result (Examiner)</u></b>
August 24, 2016: Shooting of Tylik Conway	N/A	N/A	W16-8806	None
November 2, 2016: Consensual Encounter	11	Diamondback 9mm firearm, SN FA6517	W16-10692	Item 11T (below) was test fired from this firearm (W. Gibson)
November 2, 2016: Consensual encounter	11T	Ammunition components produced from test firing Item 11 (Item created at Western Laboratory)	W16-10692	Identified as having been fired in the same firearm as Items 14 and 23 in the “Philly Boys” shooting (W. Gibson)
November 4, 2016: Search of Jaquan Trent’s Residence on Parker Road	11	Federal brand caliber .45 Auto cartridge case (reported as test fired in a Glock model 30s pistol, SN XYW336)	W17-335	Identified as having been fired in the same firearm as Item 12 of the Sunset Lane and Item 82 of the “Philly Boys” shootings (W. Gibson)
April 29, 2017: Seizure by Maryland Park Police of .40 Caliber Firearm	1	Smith and Wesson brand, semiautomatic pistol, caliber .40 S&W, Model SD4OVE, SN FYH4828, with one compatible Smith & Wesson brand magazine having a capacity of fourteen (14) cartridges.	PGC-FEU: 17-691-SCM	Identified as having fired Item 2 in the C. Motley murder (S. McVeigh)

In addition to the above-noted Certificates of Analysis, the defense also has the notes, photographs, diagrams, and other documents from the laboratory's casefiles showing how the examiners arrived at their reported results. Those items were produced by the United States and are designated for trial as follows:

- DFS # W15-11669 Government's Trial Exhibits: 14-23
- DFS# W16-4792 Government's Trial Exhibits: 59-61, 65-68
- DFS# W16-4230 Government's Trial Exhibits: 62-64, 69-72
- DFS# W16-6453 Government's Trial Exhibits: 157-162
- DFS# W16-8043 Government's Trial Exhibits: 231-233
- DFS# W16-8806 Government's Trial Exhibits: 289-291
- DFS# W16-10692 Government's Trial Exhibits: 309-315
- DFS#W17-335 Government's Trial Exhibits: 319-322
- PGC-FEU 17-691 Government's Trial Exhibits: 245-259

### **ARGUMENT**

The defense argues that expert testimony regarding the toolmark analyses performed on shell casings recovered during this investigation should be excluded completely. The defense has not cited, and the government is unaware of, any court that has excluded similar testimony. Indeed, the cases cited by the defense in support of its argument all *allowed* the challenged expert toolmark testimony. *See, e.g., United States v. Monteiro*, 407 F. Supp. 2d 351, 364 (D. Mass. 2006) (noting that no federal court has deemed firearm toolmark testimony inadmissible); *United States v. Hicks*, 389 F.3d 514, 526 (5th Cir. 2004) (“[w]e have not been pointed to a single case in this or any other circuit suggesting that the methodology ... is unreliable”). Every court that has considered a challenge to the admission of expert testimony regarding toolmark examination of firearms,

including motions to exclude under *Daubert* that cite the same 2009 NAS Report the defense relies on here, have rejected those challenges and allowed the testimony. Courts that have examined the five factors set out by the Supreme Court in *Daubert* have universally concluded that firearms identifications based on the AFTE Theory of Identification described above should be admitted.

The government would agree to limit the manner in which the degree of certainty in the matches may be expressed. Specifically, the government agrees to limit the degree of certainty expressed by the experts to “in his/or her expert opinion as a firearms and toolmark examiner” without eliciting a specific certainty, unless otherwise directed by the Court.

#### **A. Firearms and toolmark analysis passes the Rule 702 test**

In *Daubert*, the Supreme Court provided a non-exhaustive list of factors to consider when evaluating the admissibility of expert testimony under Rule 702, including whether a theory or technique (1) has been or can be tested; (2) has a known or potential rate of error; (3) has been subjected to peer review and publication; (4) has standards controlling the technique’s operation; and (5) enjoys acceptance within the relevant scientific community. *Daubert*, 509 U.S. at 593-94. Although *Daubert* was limited to scientific evidence, the Supreme Court later clarified that the courts’ gatekeeping function applies not just to scientific testimony but to all expert testimony. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999). In exercising their gatekeeping function, courts must keep in mind the Supreme Court’s admonition that “vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Daubert*, 509 U.S. at 596.

As discussed in numerous peer-reviewed studies, firearms and toolmark identification satisfies each of the factors enumerated in *Daubert*. Given the extensive testing, peer-review, low levels of error, and general acceptance throughout the world, every court to address the

admissibility of firearms evidence under this standard has ruled in favor of admitting firearms evidence. E.g. *Hicks*, 389 F.3d at 526 (5<sup>th</sup> Cir. 2004); *United States v. Santiago*, 199 F. Supp. 2d 101, 111 (S.D.N.Y. 2002) (“The Court has not found a single case ... that would suggest that the entire field of ballistics identification is unreliable.”).

#### 1. Testing the science of firearms identification

The basic theory of firearms and toolmark identification—that firearms can impart microscopic toolmarks on fired ammunition components, and that those toolmarks can be used to identify a case or bullet to a particular firearm—was first documented over 100 years ago.<sup>8</sup> Since that time, the profession has been engaged in observation, documentation, and testing of firearms identification related topics. *Id.* Much of the research in the field has been published in peer-reviewed journal articles.<sup>9</sup>

With the formation of AFTE in 1969 and the start of the AFTE Journal in 1972, more studies were subjected to peer-review before publication. In addition to the AFTE Journal, research articles are published in other peer-reviewed journals such as the Journal of Forensic Science, Forensic Science International, and Science and Justice. The number of peer-reviewed studies testing the principles of firearms and toolmark analysis are voluminous; a 2007 review by Ronald Nichols highlights some of the past research.<sup>10</sup> Nichols’ review illustrates how the

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<sup>8</sup> Hamby, J., “The History of Firearm and Toolmark Identification,” AFTE Journal, Vol. 32(3), Summer 1999, pp. 266-84.

<sup>9</sup> An early example is the firearms identification research published by Biasotti in 1959. Biasotti studied bullets fired through Smith and Wesson revolvers. The author performed statistical analysis after comparing striae between matching and non-matching comparisons. He performed a total of 600 land and 600 groove impression comparisons and used statistical analysis to characterize differences between bullets fired from the same gun versus bullets fired from different guns. Biasotti, A., “A Statistical Study of the Individual Characteristics of Fired Bullets,” Journal of Forensic Sciences, Vol. 4(1), January 1959, pp. 34-50.

<sup>10</sup> Nichols, R., “Defending the Scientific Foundations of the Firearms and Tool Mark Identification Discipline: Responding to Recent Challenges,” Journal of Forensic Sciences, Vol. 52(3), May 2007, pp. 586-94.

profession has studied, characterized, and shared its findings. An additional summary of foundational peer reviewed articles is hosted on AFTE's website.<sup>11</sup>

Various forms of testing have provided objective data to support the fundamental principles of firearms and toolmark identification. These efforts include studies showing the persistence of markings over thousands of firings (allowing examiners to identify first to last cartridge case/bullets fired from a firearm)<sup>12,13</sup> and studies of subclass characteristics to learn what type of manufacturing methods are likely to cause such markings and to confirm that such characteristics do not interfere with an examiner's ability to distinguish cartridge cases and bullets fired from two firearms despite the presence of subclass characteristics.<sup>14,15,16,17,18,19,20</sup> Thus, as even the cases relied on in the Motion agree, the theory has been well tested and favors admissibility. *United States v. Otero*, 849 F. Supp. 2d 425, 433 (D.N.J. 2012) ("The literature in the field of firearms and toolmark identification documents that the theory has been repeatedly tested."); *United States v. Taylor*, 663 F. Supp. 2d 1170, 1175-76 (D.N.M. 2009) (noting that studies "demonstrating that the methods underlying firearms identification can, at least to some degree, be tested and reproduced"); *Monteiro*, 407 F. Supp. 2d at 369 ("[T]he existence of the requirements of peer

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<sup>11</sup> AFTE Website, <https://afte.org/resources/swggun-ark/testability-of-the-scientific-principle>. The collection is organized by topic: Firearms Identification-Bullets, Firearms Identification-Cartridge Cases, Firearm and Toolmark Identification-Theoretical, Toolmark Identification, Fracture Matching and Emerging Research.

<sup>12</sup> Gouwe, J. et al., "Comparison of 10,000 Consecutively Fired Cartridge Cases from a Model 22 Glock .40 S&W Caliber Semiautomatic Pistol," AFTE Journal, Vol. 40(1), Winter 2008, pp. 57-63.

<sup>13</sup> Saribey, A. et al., "An Investigation into Whether or Not Class and Individual Characteristics of Five Turkish Manufactured Pistols Change During Extensive Firing," J. Forensic Science, Vol. 54(5), Sept. 2009, pp. 1068-72.

<sup>14</sup> Churchman, J.A., "The Reproduction of Characteristics in Signatures of Cooney Rifles," 1949, RMCP Gazette.

<sup>15</sup> Skolrood, R.W., "Comparison of Bullets Fired From Consecutively Rifled Cooney .22 Calibre Barrels," Can.Soc.Forensic.Sci. Vol. 8(2), 1975, pp. 49-52.

<sup>16</sup> Coody, A.C., "Consecutively Manufactured Ruger P-89 Slides," AFTE Journal, Vol. 35(2), Spring 2003, pp. 157-160.

<sup>17</sup> Matty, W., "Raven .25 Automatic Pistol Breech Face Tool Marks," AFTE Journal, Vol. 16 (3), 1984, pp. 57-60.

<sup>18</sup> Biasotti, A., "Rifling Methods—A Review and Assessment of the Individual Characteristics Produced," AFTE Journal, Vol. 13(3), 1981, pp. 34-61.

<sup>19</sup> Rivera, G., "Subclass Characteristics in Smith and Wesson SW40VE Sigma Pistols," AFTE Journal, Vol. 39(3), Summer 2007, pp. 253-58.

<sup>20</sup> Lightstone, L., "The Potential for and Persistence of Subclass Characteristics on the Breech Faces of SW40VE Smith and Wesson Sigma Pistols," AFTE Journal, Vol. 42(4), Fall 2010, pp. 308-22.

review and documentation ensure sufficient testability and reproducibility to ensure that the results of the technique are reliable.”); *United States v. Diaz*, 2007 WL 485967, at \*6 (N.D. Cal. Feb. 12, 2007) (holding that “the theory of firearms identification, though based on examiners’ subjective assessment of individual characteristics, has been and can be tested”).

## 2. Known or potential error rate

The firearms and toolmark profession has been proactive about testing examiner performance with a variety of test designs and samples. These studies are often called “validation” studies or “black box” studies and consist of examiners being given a series of samples known to the researchers. The examiners then perform comparisons and report their findings, and the test provider reports on the examiners’ performance, *i.e.*, an error rate.

Several validation studies have used “consecutively manufactured” samples, meaning firearms that have been produced one directly after the other, on the same production line, using the same tools. Such samples are most likely to have subclass characteristics (or toolmarks with little change or variation from one machined part to the next) and thus have the greatest likelihood of producing a false identification. Despite these “worst-case scenario” samples, peer-reviewed research has consistently shown a low error rate. Although the import of these worst-case-scenario validation studies was lost on the authors of the 2009 NAS Report, courts have appreciated the significance of the studies on the reliability inquiry under Rule 702. *See Otero*, 849 F. Supp. 2d at 432 (“Some of these ‘validation studies’ seek to validate the theory that one can individualize tools, even when comparing marks made by tools of the greatest possible similarity, such as those involved in the consecutive manufacture of various firearms of the same make.”) (citing Coody, “Consecutively Manufactured Ruger P-89 Slides,” *ATFE Journal*, Vol. 35(2), Spring 2003, at 157; Brundage, “The Identification of Consecutively Rifled Gun Barrels,” *ATFE Journal*, Vol. 30(3), Summer 1998, at 438).



The following is a non-comprehensive list of validation studies and the accompanying rate of false positive results—*i.e.*, an instance where an examiner made an affirmative “match” that was incorrect:

<u>STUDY</u>	<u>ERROR RATE</u>
Brundage (1998)	0% <sup>21</sup>
Bunch & Murphy (2003)	0% <sup>22</sup>
De France (2003)	0% <sup>23</sup>
Smith (2005)	0% <sup>24</sup>
Orench (2005)	0% <sup>25</sup>
Hamby (2009)	0% <sup>26</sup>
Lyons (2009)	1.2% <sup>27</sup>
Mayland (2012)	1.6% <sup>28</sup>
Fadul (2013)	0.064% Phase 1 .18% Phase 2 <sup>29</sup>
Fadul (2013)	.7% <sup>30</sup>
Baldwin (2014)	1.01% <sup>31</sup>
Stroman (2014)	0% <sup>32</sup>
Smith (2016)	0% (Bullets) .144% (Cases) <sup>33</sup>

<sup>21</sup> Brundage, D.J., “The identification of consecutively rifled gun barrels,” AFTE Journal, Vol. 30(3), 1998, pp. 438-44.

<sup>22</sup> Bunch and Murphy, “A comprehensive validity study for the forensic examination of cartridge cases,” AFTE Journal, Vol. 35(2), 2003, pp. 200-03.

<sup>23</sup> DeFrance and Van Arsdale, “Validation study of electrochemical rifling,” AFTE Journal, Vol. 35(1), 2003, pp. 35-7.

<sup>24</sup> Smith, E., “Cartridge case and bullet comparison validation study with firearms submitted in casework,” AFTE Journal, Vol. 37(2), 2005, pp. 130-5.

<sup>25</sup> Orench, J., “A validation study of fracture matching metal specimens failed in tension,” AFTE Journal, Vol. 37(2), Spring 2005, pp. 142-49.

<sup>26</sup> Hamby et al., “The identification of bullets fired from 10 consecutively rifled 9mm Ruger pistol barrels: a research project involving 507 participants from 20 countries,” AFTE Journal, Vol. 41(2), 2009, pp. 99-110.

<sup>27</sup> Lyons, D.J., “The identification of consecutively manufactured extractors,” AFTE Journal, Vol. 41(3), Summer 2009, pp. 246-56.

<sup>28</sup> Mayland B., Tucker, C., “Validation of Obturation Marks in Consecutively Reamed Chambers,” AFTE Journal, Vol. 44(2), Spring 2012, pp. 167-69. One examiner reported three false identifications, and the remaining 63 examiners reported no false identifications (overall error rate of 1.6%).

<sup>29</sup> Fadul et al., “An empirical study to improve the scientific foundation of forensic firearm and tool mark identification utilizing 10 consecutively manufactured slides,” AFTE Journal, Vol. 45(4), 2013, pp. 376-93.

<sup>30</sup> Fadul et al., “An empirical study to improve the scientific foundation of forensic firearm and tool mark identification utilizing consecutively manufactured Glock EBIS barrels with the same EBIS pattern,” National Institute of Justice Grant #2010-DN-BX-K269, December 2013.

<sup>31</sup> Baldwin et al., “A study of false-positive and false-negative error rates in cartridge case comparisons,” AMES Laboratory, USDOE, Technical Report #IS-5207 (2014).

<sup>32</sup> Stroman, A., “Empirically determined frequency of error in cartridge case examinations using a declared double blind format,” AFTE Journal, Vol. 46(2), 2014, pp. 157-75.

<sup>33</sup> Smith et al., “A Validation Study of The Bullet and Cartridge Case Comparisons Using Samples Representative of Actual Casework,” Journal of Forensic Sciences, Vol. 61(4), 2016, pp. 939-46.

Each of the government's proffered experts have participated in numerous studies over their careers, including some of the studies noted above. Significantly, in the studies wherein individual results were released to the participants, none of the proffered experts ever had a false positive.

The district court in *Otero* discussed why it is most probative to focus on false positives when considering error rates:

The Court further finds that the error rate for false positives, as reported by the Grzybowski article, is pertinent to its assessment of the expert testimony in this case, as the proffered testimony would make such a positive identification of the guns recovered from Defendants as the origin of the bullet and shells recovered from the crime scene. Indeed, for the purposes of utilizing toolmark identification in legal proceedings, the critical validation analysis has to be the extent to which false positives occur.

849 F. Supp. 2d at 433 (citing Grzybowski et al., "Firearm/Toolmark Identification: Passing the Reliability Test Under Federal and State Evidentiary Standards," *AFTE Journal*, Vol. 35(2), Spring 2003). The above list of validation studies indicates that the firearms discipline continues to conduct studies to research the number of false positive identifications, sometimes under worst-case-scenario circumstances, and that trained examiners continue to demonstrate that the rate of error for the field is quite low. *United States v. Ashburn*, 88 F. Supp. 3d 239, 246 (E.D.N.Y. 2015) ("The court finds that due to the subjective nature of the inquiry, a definitive error rate is impossible to calculate, but also finds that the error rate, to the extent it can be measured, appears to be low, weighing in favor of admission of the expert testimony."); *Otero*, 849 F. Supp. 2d at 434 ("information derived from ... proficiency testing is indicative of a low error rate,"); *Taylor*, 663 F. Supp. 2d at 1177 (concluding that the error rate is "quite low"); *Diaz*, 2007 WL 485967, at \*8 (concluding that due to the subjective nature of the methodology, "it is not possible to calculate an absolute error rate for firearms identification," but that "the government has provided enough data to show that the error rates among trained firearms examiners are sufficiently low to counsel in favor of admitting the evidence").

Finally, the accuracy of individual casework is enhanced through technical review of case notes and through standard operating procedures that typically require all identifications to be documented and then subjected to confirmation by a second examiner, as they were here. Because firearms evidence is non-consumptive by nature, the internal laboratory quality assurance programs are further enhanced by the fact that the defense has the opportunity for additional review through independent testing if there is any reason to suspect that an error has occurred.

The defense has pointed to nothing in the case at hand indicating any kind of error. The firearms examiners have never had a false identification; their conclusions were peer-reviewed by another trained firearms examiner before the reports were issued—or, in the instances where they were not the first examiner, they themselves reviewed and approved the work of the first examiner.

### 3. Peer review

Studies testing the foundational research of firearms and toolmark identification, and examiners' ability to reliably match a cartridge case or bullet to a particular firearm, have been published in peer-reviewed scientific journals, including the AFTE Journal,<sup>34</sup> the Journal of Forensic Science, Science and Justice, and Forensic Science International. Nearly all of the articles cited herein are from peer-reviewed scientific journals. Courts have repeatedly held that the methodology used by the field has been subjected to peer-review. *Ashburn*, 88 F. Supp. 3d at 246 (“The court finds that the AFTE methodology has been published and subject to peer review, weighing in favor of admission ....”); *Diaz*, 2007 WL 485967, at \*8 (“The fact that the articles submitted to the AFTE Journal are subject to peer review weighs strongly in favor of admission.”); *Otero*, 849 F. Supp. 2d at 433 (noting AFTE Journal’s formal process for the submission of

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<sup>34</sup> The AFTE Journal and peer-review process is discussed in Denio, Dominic J., “The History of the AFTE Journal, the Peer Review Process and Daubert Issues,” AFTE Journal, Vol. 34(2), Spring 2002, pp. 210-14.

articles); *Taylor*, 633 F. Supp. 2d at 1176 (finding the peer review factor “clearly weighs in favor of admissibility.”).<sup>35</sup>

#### 4. Maintenance of standards and controls

Standards and controls for the firearms and toolmark profession are published and maintained in several foundational sources. AFTE has published the following standards for professional guidance and use:

- AFTE Training manual: 166-page document outlining all steps a new trainee should undertake prior to starting casework.
- AFTE Technical Procedures Manual: 116-page document providing technical procedures for typical examinations that may occur in firearms and toolmark identification laboratories.
- AFTE Glossary: 244-page document providing the profession with standardized terminology and definitions.
- AFTE Theory of Identification<sup>36</sup>: First published in 1992, the Theory of Identification distills the essence of firearms identification into several paragraphs. The Theory of Identification describes the basis for an identification as well as the current limitations of the profession. The theory has undergone revisions and remains the agreed upon standard for identification by the firearm and toolmark profession.

DFS and the PGC-FEU maintain their own Procedures Manual, which is based on the AFTE Procedures Manual and other sources. See <http://www.dfs.virginia.gov/wp-content/uploads/2017/09/240-D100-FX-TM-Procedures-Manual.pdf>. Accordingly, the field maintains, and continues to develop, standards controlling the technique’s operation. See *Otero*,

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<sup>35</sup> The *Taylor* court, in a separate order, also granted the government’s motion to exclude the testimony of Adina Schwartz, Ph.D., as a proffered expert on the reliability of firearms identification. *United States v. Taylor*, Case No. 2:07cr1244, Docket No. 566 (Mem. Op. and Order Granting U.S. Mot. to Exclude Expert Testimony of Adina Schwartz, Sept. 30, 2009). The court noted that Dr. Schwartz, whose academic work the defense relies on in the Motion, had never fired a gun. *Id.* at 5-6. Citing “serious criticisms, not just of Dr. Schwartz’s conclusions, but of the integrity of her scholarship,” the court found that Dr. Schwartz’s academic opinion about the purported unreliability of firearms identification was itself not sufficiently reliable under Rule 702, *Daubert*, and *Kunho*. *Id.* at 12-13.

<sup>36</sup> Committee for the Advancement of the Science of Firearm & Toolmark Identification, “Theory of Identification as it Relates to Toolmarks: Revised,” *AFTE Journal*, Vol. 43(4), Fall 2011, p. 287.

849 F. Supp. 2d at 435 (“In sum, the Court concludes that the maintenance of industry-compliant standards by the [New Jersey State Police] for conducting a firearms and toolmark identification examination, and the adherence to those standards and procedures by [the examiner], further support the reliability and therefore admissibility of the expert testimony.”).

The maintenance of standards and controls is the *Daubert* factor some courts have found lacking, even though all of them have gone on to admit the challenged testimony. *Monteiro*, 407 F. Supp. 2d at 371-72; *United States v. Green*, 405 F. Supp. 2d 104, 114 (D. Mass. 2005); *United States v. Glynn*, 578 F. Supp. 2d 567, 572 (S.D.N.Y. 2008). Importantly, nothing in hundreds of peer-reviewed journal articles to date has invalidated the foundational premise that a trained examiner can reliably identify a cartridge case/bullet to a particular gun or a case to another case. In other words, even though a degree of subjectivity is embedded in the methodology—as it is in other forensic disciplines—current research provides objective empirical support for this work. And, as noted above, the government does not intend to elicit a statement from its experts that their conclusions are to a “reasonable degree of scientific certainty” or to any precise statistical certainty.

##### 5. General acceptance

Numerous courts have held that the AFTE theory of firearms and toolmark identification methodology is widely accepted. *Ashburn*, 88 F. Supp. 3d at 247; *Otero*, 849 F. Supp. 2d at 435; *Taylor*, 663 F. Supp. 2d at 1178; *see also Jones v. United States*, 27 A.3d 1130, 1137 (D.C. Ct. App. 2011) (holding that toolmark comparison matching “remains widely accepted” in the “relevant scientific community”). The defense has not pointed to any case holding that the AFTE theory is not generally accepted.

## **B. 2009 NAS Report**

Regarding the 2009 NAS Report, the District of Columbia Court of Appeals noted that “even after considering it, we are still unpersuaded that pattern matching is no longer generally accepted.” *Jones*, 27 A.3d at 1137 n.7. Soon after, in *Thomas v. United States*, the same court held:

In challenging the general acceptance of firearms and toolmark identification, [appellant] relies primarily on [the 2009 NAS Report] – a broad-based report, commissioned by Congress, examining a variety of forensic disciplines, not just firearms and toolmark identification. [Appellant] relies on language in the report, which challenges the lack of statistics, “lack of sufficient studies,” and “lack of a precisely defined process” as evidence that firearms and toolmark identification[s] are no longer generally accepted or, in fact, not “science” at all. [Appellant], however, confuses a single scientific report, which reaches no definitive conclusion and which includes no independent examination of the challenged methodology, with general discord in the scientific community. We therefore reject [appellant’s] reliance on the [2009] NAS Report.

Expert testimony of firearms and toolmark examiners has been admissible in this court for decades – in fact, only a decade shy of a century. Beyond the criticisms and suggestions for more research raised in the [2009] NAS Report, [appellant] has presented nothing showing that the expert testimony of firearms examiners is not “based on a scientifically sound methodology, as determined by members of the relevant scientific community.”

Case Nos. 09-CF-1572, 09-CF-1584, 09-CF-1585, Mem. Op. & Judgment, at 4-5, *available at* <https://afte.org/uploads/documents/swggun-usvthomas.pdf>.

After issuance of the 2009 NAS Report, state and federal courts continued to admit firearms and toolmark evidence under *Daubert* and Rule 702. *Ashburn*, 88 F. Supp. 3d at 247 (holding that firearms and toolmark identification is a proper subject of expert testimony under Rule 702 and *Daubert* after considering the 2009 NAS Report); *United States v. Casey*, 928 F. Supp. 2d 398, 400 (D. Puerto Rico 2013) (same); *Ohio v. Langlois*, 2 N.E.3d 936, 950 (Ohio Ct. App. 2013) (firearms and toolmark identification satisfies the test for reliability under Rule 702); *Otero*, 849

F. Supp. 2d at 438 (essential foundations for the admission of expert testimony under Rule 702 established by the government); *United States v. Willock*, 696 F. Supp. 2d 536, 568 (D. Md. 2010); *Taylor*, 663 F. Supp. 2d at 1180 (“The evidence before the Court indicates that when a bullet is fired from a gun, the gun will impart to the bullet a set of markings that is, at least to some degree unique to that gun. The evidence further indicates that an experienced firearms examiner can make observations of those markings, using a method that has been peer-reviewed, that allow him, in some cases, to form an opinion that a particular bullet was or was not fired from a particular gun. The court therefore concludes that the firearms identification testimony is admissible under Rule 702 and *Daubert*.”); *State v. Lee*, 2017 WL 1494012, at \*10 (La. Ct. App. Apr. 26, 2017) (“[E]ven after publication of the NAS Report, courts have addressed, in detail, the reliability of [firearms and toolmark identification] testimony and ruled it admissible, although to varying degrees of specificity.”); *Spears v. Ryan*, 2016 WL 6699681, at \*5 (D. Ariz., Nov. 15, 2016) (“[T]he NAS Report would have had no effect on the admissibility of the toolmarks evidence in this case.”); *Napier v. Commonwealth*, 2014 WL 3973113, at \*9 (Ky. Ct. App., Aug. 15, 2014) (noting that it was not the purpose of the 2009 NAS Report to opine on the long-established admissibility of toolmark and firearms testimony in criminal prosecutions and that there was no error in taking judicial notice of scientific reliability of ballistic analysis under *Daubert*); *United States v. Sebborn*, 2012 WL 5989813, at \*8 (E.D.N.Y. Nov. 30, 2012) (no need for a *Daubert* hearing before admitting ballistics evidence); *United States v. Cerna*, 2010 WL 3448528, at \*5 (N.D. Cal. Sept. 1, 2010) (the NAS report “does not necessitate exclusion of expert [ballistics] testimony.”).

So as not to overstate the certainty of an identification, the firearms examiners will refrain from expressing their identification in terms of absolute certainty. Further, in the case of the match of a casing to a firearm, neither Wendy Gibson or Scott McVeigh will not state or imply that the identification is being made to the exclusion of all other firearms in the world. Furthermore,

consistent with the directive of former Attorney General Loretta Lynch, the government will not elicit a statement that the firearms examiner's conclusions are held "to a reasonable degree of scientific certainty."

Considering that firearms examiners have for decades proven their ability to distinguish toolmarks fired by guns manufactured next to one another on the assembly line, the proposed testimony is conservative.

**C. Cases in which a toolmark examiner's testimony was further limited are readily distinguishable**

None of the cases relied on in the Motion excluded the challenged expert testimony, and most of the cited cases allowed testimony about the strength of the examiner's conclusion in some variation of the formulation "to a reasonable degree of certainty in the ballistics field." *See Otero*, 849 F. Supp. 2d at 429; *Taylor*, 663 F. Supp. 2d at 1179; *Monteiro*, 407 F. Supp. 2d at 355; *Diaz*, 2007 WL 485967, at \*1. In several distinguishable cases, though, the court placed further limitations on the expert's testimony. *See Glynn*, 578 F. Supp. 2d at 575 (limiting degree to which certainty could be expressed to "more likely than not"); *Green*, 405 F. Supp. 2d at 108-09 (expert "may only describe and explain the ways in which the earlier casings are similar to the shell casings test-fired from the ... pistol found a year later"); *Willock*, 696 F. Supp. 2d at 546 (imposing a complete restriction on the characterization of certainty).

*Green* and *Willock*, however, involved forensic examination shortcomings not present here. In *Green*, the Boston Police Department forensic examiner had performed his work five years prior and had not taken notes, photographs, or measurements, or followed protocols for toolmark examination generally; he also was not certified by AFTE or any other organization. 405 F. Supp. 2d at 108-09. In *Willock*, the testifying examiner's conclusions relied on an examination conducted by a different examiner, "whose qualifications, proficiency and adherence to proper methods are unknown." 696 F. Supp. 2d at 546, 573-74. That fact led the court to "depart[] from



recent cases in which firearm and toolmark examiners have been permitted to state their opinions to ‘a reasonable degree of certainty in the ballistics field.’” *Id.* (quoting *Diaz*, 2007 WL 485967, at \*4).<sup>37</sup> The problems outlined in *Green* and *Willock* are not present here. One of the government’s proffered experts, Wendy Gibson, is an AFTE-certified firearms and toolmark examiner, and both Gibson and Etzelmiller are certified by the Commonwealth of Virginia. Both work in a certified and independent state laboratory who performed or verified each of the examinations themselves, followed DFS and AFTE protocols, and documented their examinations with the requisite notes and diagrams. Government’s expert Scott McVeigh has over thirty years of professional law enforcement experience, having served as a patrol officer, detective, senior evidence technician, firearm evidence technician, and crime lab coordinator. He has been a member of AFTE for over fifteen years, but lacks official certification because he does not have a college degree. It is anticipated, by the time of the *Daubert* hearing he will be a designated a “Distinguished Member” of the AFTE. Further, he is a published author on the topic of firearms and toolmark examinations and a frequent lecturer and instructor in this field. Like Gibson and Etzelmiller, he works in a certified and independent laboratory and performed the examination at issue, followed PGC-FEU and AFTE protocols, and documented his examinations with the requisite notes and diagrams

Additionally, *Willock* is not the only reported case in this circuit in which casings were matched to each other without a gun. In *United States v. Foster*, 300 F. Supp. 2d 375, 376 (D. Md. 2004), Judge Blake rejected a Rule 702/*Daubert* challenge to expert toolmark testimony matching

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<sup>37</sup> During the trial in *Willock*, appealed *sub nom.* *United States v. Mouzone*, the examiner testified that the casings at issue were “fired from the same firearm,” and also stated that “the chances of that happening in a random fashion on two different surfaces, there comes a point where it’s a practical impossibility.... That’s when I’m convinced that these two [cartridge cases] were marked by the same surface.” 687 F.3d 207, 216 (4th Cir. 2012) (alteration in original). The Fourth Circuit held that any violation of the district court’s order restricting the scope of the expert’s testimony was harmless and affirmed the verdict. *Id.* at 216-17. The *Mouzone* court did not address the merits of the district court’s *Daubert* ruling.

spent cartridge casings where no known weapon was recovered. Noting that “[i]n the years since *Daubert*, numerous cases have confirmed the reliability of ballistics identification,” the court held that the “science of ballistics” was generally reliable, “even where there is no ‘known’ weapon recovered,” and declined to impose any restriction on the expert’s testimony. *Id.* at 376 & n.1.

Judge Rakoff’s opinion in *Glynn* is an outlier. Several courts have explicitly rejected its limitation on the degree of certainty with which the expert’s opinion could be given to “more likely than not.” As numerous courts have held, that formulation inappropriately understates the degree of certainty with which qualified firearms and toolmark examiners reach their conclusions. In *Casey*, the court credited a sworn statement that “greatly undermine[d] the portions of the 2008 NAS report” on which *Glynn* relied and declined to impose a similar limitation on the expert’s testimony. 928 F. Supp. 2d at 399-400. The court in *Ashburn* likewise rejected the limitation imposed in *Glynn*, stating that it “is correct that an experienced ballistics expert is qualified to say more than ‘it is more likely than not’ that there is a match.” 88 F. Supp. 2d at 249 n.4; *see also*, *e.g.*, *United States v. Johnson*, Case No. 14-CR-412, 2015 WL 5012949, at \*5 (N.D. Cal. Aug. 24, 2015) (“This Court will not require [the firearms expert] to qualify her expert opinion with the rigid disclaimer that the match is ‘more likely than not,’ as such a specific restriction seems arbitrary. However, should [the firearms expert] testify at trial that the items matched with ‘absolute certainty,’ or to some other arbitrary degree of statistical certainty, the Court will take the necessary steps to strike such improper testimony immediately.”); *Cerna*, 2010 WL 3448528, at \*5 (N.D. Cal. Sept. 1, 2010) (noting that the standard in *Glynn*, where the expert was only permitted to state that a bullet or casing “more likely than not” came from a particular firearm, “is not appropriate as it suggests that the expert is no more than 51% sure that there was a ‘match.’”).

**D. The Governments' Expert Witness Disclosures Comply with Federal Rule of Criminal Procedure 16(d)(2)(C)**

Rule 16 of the Federal Rules of Criminal Procedure establishes three disclosure responsibilities relevant to forensic evidence. First, under Fed. R.Crim. P. 16(a)(1)(F), the government must, upon request of the defense, turn over the results or reports of any scientific test or experiment (i) in the government's possession, custody or control, (ii) that an attorney for the government knows or through due diligence could know, and (iii) that would be material to preparing the defense or that the government intends to use at trial. Second, under Fed. R. Crim. P. 16(a)(1)(G), if requested by the defense, the government must provide a written summary of any expert testimony the government intends to use at trial. At a minimum, this summary must include the witness's opinions, the bases and reasons for those opinions, and the expert's qualifications. Third, under Fed. R. Crim. P. 16(a)(1)(E), if requested by the defense, the government must produce documents and items material to preparing the defense that are in the possession, custody, or control of the government. This may extend to records documenting the tests performed, the maintenance and reliability of tools used to perform those tests, and/or the methodologies employed in those tests.

The defense motion argues that the government has failed in its obligations under Rule 16. A review of the government's expert witness disclosure and documents suggests otherwise.

In the Notice of Expert Witness and subsequent Amended Expert Notice(s), the government provided the following information:

- The relevant Certificate of Analysis outlining the conclusion of each expert and a representation that each witness would testify consistently with the opinions and conclusions set forth in each Certificate of Analysis. (ECF Nos. 532, 538, 541, 664, 665). Each certificate outlined the item examined and the results of the examination. *Id.*

- A statement that the bases for each expert's opinions and conclusions included their training and experience, lab reports and lab notes. *Id.* Defense was further advised that a copy of all the lab reports and lab notes had previously been disclosed in discovery. *Id.*
- A copy of the *Curriculum Vitae* for each expert witness. *Id.*
- An invitation to each counsel to meet with each or all of the expert witnesses prior to their testimony in court. *Id.*

As noted previously in this Response, the referenced exhibits which formed the bases for the expert's opinions/conclusions were clearly marked in discovery as "FS Lab" and further separated by incident for ease of review. Each "FS Lab" file which provided to the defendants included: (1) Requests for Lab Examinations (RFLE), (2) Case Worksheets (notes taken contemporaneously with examination), (3) IBISTRAX Exhibit Information (i.e. information from the NIBIN system indicating a "potential match" of casing to casing or casing to firearm), and (4) images of the casings taken during the examination. There is simply nothing more in the government's possession as it relates to these experts and their opinions and conclusions to turn over. The government has identified the expert, identified the conclusion the expert reached, identified each of the relevant Certificates of Analysis, and provided each of the supporting examination documentation (i.e. lab notes and images). All the necessary information has been provided to counsel timely and as required under Rule 16. The defendants' objection to the government's expert notice is one of form over substance; the defendants are essentially arguing that the notice is deficient because the government incorporated certain documents into its expert notice instead of typing the language of the reports and lab notes into the notice itself. The best evidence that the government's expert notice was sufficient and appropriate are the detailed

objections and arguments the defendants' have made against the experts' bases and conclusions in their *Daubert* filings. The expert notices meet the Rule 16 requirements.<sup>38</sup>

**E. The defense already has the additional documentation it seeks, and nothing prevents the defense from conducting an appropriate cross-examination.**

The defense has in its possession hundreds of pages of casefile materials related to the individual Certificate of Analysis reports that were initially produced. Those casefile materials document, among other things, the types of toolmarks identified; the particular lands and grooves, and inclination of lands and grooves, found on the examined bullets; and the examiner's notes regarding each examined item that support the matches at issue. That documentation, which is required by DFS and PGC-FEU policy to be created and maintained as part of the examination process, ensures among other things that the defense has what it needs to conduct an appropriate cross-examination of the expert.

**CONCLUSION**

For the reasons stated above, the Motions should be denied.

Respectfully submitted,

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<sup>38</sup> The government's other expert notices proceed in the same formula, by providing copies of the experts' reports and CV, and incorporating the supporting lab notes and materials. However, none of the defendants challenge these notices.

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 26th day of August, 2019, I electronically filed the foregoing with the Clerk of Court using the CM/ECF system, which will send a notification of such filing (ECF) to all counsel of record.

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